Traffic Counter Specifications

Quantity

This bid is for 110 counters as per the following description. In addition, 10 licensed and fully functional copies of Communications software are to be included. If there are different program software levels then what we require is 2 full versions of communications programs that are capable of Auto Polling and data processing and 8 field copies that only need to be able to communicate, set up counters and download data.

General

a) The traffic counter shall be able to collect Sensor timestamp, PVR (per vehicle record), speed and length binned, and volume data types which shall be user selectable to store that data in 1, 5, 10, 15, 30 minute and 1 hour intervals.
b) The counter shall have the ability for local communications using a USB and/or Serial port. In addition, it must be capable of remote communications using an IP modem and land line modem.
c) The counter must have an LCD display with an installed or removable keypad.
d) The counter case and external connections must be at least IP42 weather resistant and the case must have a mechanism for locking the lid shut using a standard padlock.
e) The counter shall operate within the temperature range of -40 to 150 degrees Fahrenheit.
f) All electronic components shall be new, using solid state CMOS design with low power consumption.
g) All equipment furnished, including any purchased from other manufacturers, shall be made from new parts and materials, and they shall be of the latest design currently in production. Discontinued, used, reconditioned and refurbished equipment shall not be accepted.
h) Electronic components shall be fully protected against power surges and reversed voltages. Unit shall include a heavy duty grounding strap for field protection against power surges.
i) Unit shall have the ability to resume data collection if power interrupt or low battery shutdown occurs to allow for highest amount of uptime for data collection.
j) Unit must be able to operate with standard AC power or Solar powered applications alike.
k) Each unit must be supplied with the following:
    a) One modem cable
    b) One serial cable
    c) Loop harness sufficient to do at least 8 loops.
    d) AC power adaptor and cable.
    e) One external detector harness, capable of at least 8 external inputs.
    f) Any additional cabling necessary for operation of the equipment.

Power

a) Each traffic counter shall be equipped with a rechargeable battery.
b) The battery is required to operate the counter for a minimum of 14 days, without a recharge.
c) The counter shall have an indicator showing the battery voltage.
d) There shall be an external power connector.

e) The unit shall be able to allow for batteries to be hot swapped while power is connected without the interruption of data collection.

Detectors

a) The counter must be equipped with at least 8 loop detectors, with the ability to upgrade to at least 16. If upgrading to 16 loop detectors requires additional external detectors, then the holes for the connectors must be pre-punched and blanked off to allow for field upgrades.
b) The counter must be able to receive inputs from at least -16 external loop detectors.
c) Loop detectors shall have user adjustable sensitivity, frequency and scan rate settable on-site or remotely.
d) Unit shall be upgradeable to allow for 8 Piezo axle sensors with adjustable gain, threshold and timeout settings.
e) Unit shall be upgradeable to a loop based classification system to allow for FHWA 13 Class data collection using current installed loop sensors at MDOT locations.

Memory

a) Each counter shall have, at a minimum, 128 megabytes of non-volatile flash memory with swappable SD memory cards.
b) Each counter shall have the ability to display total memory and memory capacity used.
c) On-board memory shall be retained in the event of a power failure, either by utilizing flash memory or battery-backed up RAM.
d) In the event that all memory is utilized in the counter, the counter shall have the user selectable option to automatically overwrite older files in memory beginning with the oldest file first.

Firmware

a) Firmware shall be flash-upgradeable via USB or serial port.
b) Timekeeping
    a) Each counter shall provide a means for setting the date and time when idle or during active data collection.
    b) The counter shall automatically account for leap year.
    c) Counter shall be user selectable whether or not to automatically switch between standard time and a user-definable or automatic daylight savings time.
c) Firmware shall allow all setup changes to be made using an integrated or attachable keypad, a computer connected via USB and/or serial port, and remotely via IP or land line modem.

Data Retrieval

a) The counter shall allow for file retrieval via Desktop/Laptop computer and remote modem (IP and land line) connection.

Display

a) The counter shall have a water resistant LCD display capable of showing all need information to setup, test, interrogate, diagnose and operate the counter.
b) The counter will have at a minimum a 4 line 20 character LCD display.

Keypad

a) The counter must have a water resistant keypad capable of performing everything needed to setup, test, interrogate, diagnose and operate the counter.

Data Collection

a) All data shall be collected and stored in a daily file uniquely marked by use of date and/or Site ID.

Desktop and Laptop Application Software

a) The software shall operate on MDOT's desktop and laptop computers with Microsoft Windows operating systems "Windows XP", "Windows 7" and "Windows 8". The software shall also be compiled and able to run in a Windows 32 bit and 64 bit operating environment.
b) All software interfaces shall use standard Microsoft Windows Graphical User Interface (GUI) as in Windows XP and Windows 7 and 8. The GUI shall allow dialog boxes, window controls, mouse devices and local and network printing.
c) The software shall allow for selection of a time zone and, by user selection, shall have the ability to automatically switch between daylight savings time and standard time. The software shall automatically adjust for leap year.
d) The software shall have the ability to automatically call (via IP and landline modem) and collect data from remote sites.
    a) The automatic calling will be user definable for sites to call, time to call and how and where to store collected data.
    b) The counter, either through IP modem or the auto calling program, will regularly sync time.
e) The software shall allow for full access to the counter, remotely and/or direct connect, and give the user the ability to change any and all parameters and setup options.
f) Software shall allow the collected data to be transferred from data retrieval units or downloaded from the traffic counters to a computer.
g) Software shall allow for storing, organizing, reporting and exporting data in multiple formats.
h) The vendor shall provide a user manual and the installation instructions in electronic format. The manual shall include information such as flow charts, troubleshooting techniques and a list of known problems.
i) Software updates shall be made available to the State at no cost for a minimum period of 5 years.

Data Retrieval

a) The software shall provide for the transfer of data directly from a traffic counter to a PC and remote transfer via Standard and IP modem.
b) The software shall store retrieved raw data (binary files) to a user-defined location.
    a) These files shall contain raw data retrieved during manual or automatic file retrieval.
    b) All sites collected using the automatic calling function will be appended into a single daily file.
    c) All file names shall be unique with no conflicts in naming conventions.
    d) At minimum, individually collected file names shall contain the file creation date and station number.
    e) The software shall not overwrite raw data. To ensure unique file names, a number may be appended to the end of the file name to guarantee uniqueness if needed.
c) The software shall provide a function that will allow users to convert binary files into a user-readable text file as well as Michigan's specific data formats for Count, Speed and Length.
    a) The text file shall have all data that is recorded from the counter in the file.
    b) This file shall be used to compare data retrieved from counters to data provided in reports and custom exports.

Warranty

All units and accessories must be covered under the manufacturer's warranty for a period of no less than (1) one year.

Documentation and Custom Development

a) The vendor shall provide one electronic copy of the most current documentation used to install, operate, test and maintain the equipment. Documentation shall also be provided detailing use of all software applications. The vendor shall also include detailed communications protocols and all data formats that are in an open format (free for use and distribution) with no restrictions and at no charge to the State.
b) Vendor shall provide, at customers request, the ability for custom or state specific changes needed to both firmware and software as needed. Custom development or changes shall be available if requested.